

# THE FOSSIL COLLECTOR

BULLETIN Nº 11 SEPTEMBER 1983



## SECRETARY

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THE FOSSIL COLLECTORS ASSOCIATION OF AUSTRALASIA

## EDITORIAL

To assist in presenting financial statements that show publication costs in the "year" in which they occur it has been decided to alter the Association's Financial Year from 1st January - 30th December to 1st March - 28th February. Bulletin publication dates as far as it is possible will be regularised to May, September and January of each Financial Year. To members it will only mean two additional months (free!) before subscriptions become due.

One of the advantages of being an Editor/Secretary, is receiving letters from members all over Australia and from other collectors around the world.

Unfortunately, other commitments sometimes make it difficult to personally reply to every letter or note however good one's intentions are at the time.

Among recent correspondence was a note from Gordon Marrie in Rockhampton, enclosing a copy of the Queensland National Parks & Wildlife Service guide to Lark Quarry Environmental Park, the "home" of the Winton Dinosaur Tracks. Much has been written about these tracks in the popular press and indeed another pamphlet on the tracks has been available from the Queensland Museum (Geology Leaflet No.4) since 1979.

Bep Schekkerman, our Western Australian Representative writes from Perth that the Librarian from the University of W.A., Geology Department would like to receive our Bulletin, while Olive Johnson also from Perth says that when she found a note under the windscreen-wiper of her car she was very relieved to find it was not an infringement notice but a request for information about our Association from someone who had seen her F.C.A.A., sticker.

In Melbourne the Association received publicity in the Camberwell Free Press following a very successful display of fossils in the Municipal Library. Because of the unexpected interest, the display was kept on view for a total of seven weeks. Our thanks to the Museum of Victoria for lending us a cast of a Thylacaleo skull to help balance what would otherwise have been a predominantly invertebrate display.

ARTICLES NEEDED FOR BULLETIN 12 - CAN YOU HELP?

Frank Holmes

## ERRATUM - BULLETIN No.10

The Editor regrets that two of the reference letters to Fig.2 on Page 16 of the May 1983 Bulletin, were inadvertently reversed during preparation of the plates.

A. should read O. bengalensis x 3 and

B. O. bechei x 2.

On page 15, fourth paragraph line 5 underline Coniopteris sp.

## FRIENDS OF THE GEOLOGICAL AND MINING MUSEUM SOCIETY, SYDNEY.

On June 8th, 1982, it was announced in the Daily Telegraph that the Geological & Mining Museum in Sydney's Rocks area had been given two years in which to become self-supporting. The Premier's press release stated that the alternative was disposal or closure. Even with the most dedicated staff prepared to work entirely without salary it would still be difficult for this museum, indeed any museum of significant function and size, to achieve self-supporting status.

The Museum has adequately housed the State Government's geological collections since the completion of the building in 1909. Museum display area is about equally divided between mineral resource categorisations and "pure geology" type displays such as volcanoes, classification of silicates, fossils, regional geology etc.

To help circumvent such a closure, supporters of the Museum held a meeting in February 1983, with a view to forming a Society to support and assist the preservation of the Geological and Mining Museum and its collection of over 100,000 specimens of rocks, minerals and fossils.

A fully constituted Society to be known as "The Friends of the Geological and Mining Museum (FOGAMM) Society" was formed at the First Annual General Meeting in June, 1983.

Subscription categories are as follows:-

Single Membership	\$10.00	Sponsor Membership	\$100.00
Family "	\$15.00	Life-single	\$100.00
Student "	\$ 6.00	-family	\$150.00
Pensioner"	\$ 6.00	-pensioner	\$ 60.00
Institution"	\$20.00		

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## FRIENDS OF THE GEOLOGICAL AND MINING MUSEUM SOCIETY, SYDNEY.

Individual members will be entitled to 10% Museum Shop discounts (except on Departmental maps & publications), a quarterly Newsletter, weekend excursions, lectures, films & workshops, exhibition previews and a host of other benefits.

The F.C.A.A., has applied for "Institutional Membership" and strongly recommends our New South Wales members and indeed any interested members from other States, to support the Museum by joining FOGAMM.

The survival of this Museum should be of considerable concern to amateurs as well as professionals throughout the Country.

For further information write to :-

The Membership Secretary,  
Friends of the Geological and Mining  
Museum Society,  
36, George Street,  
SYDNEY, 2000.

### FINANCES

Income & Expenditure for the period 1st January, 1983 to 30th September, 1983 (excludes cost of this Bulletin).

#### INCOME

B/fwd. from 1982	\$478.93*
Subscriptions 1983	762.00
Subscriptions 1984	24.00
Overpaid subs.	3.00
Donations	3.06
Sale of Bulletins	67.20
Sale of Car Stickers	51.00
Advertising	2.50
Bank Interest	17.73
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	\$1409.42
	<hr/>
	513.71

#### EXPENDITURE

Postage	\$212.42
Printing	155.30
Photo Screening	60.00
Stationery	43.07
Sundries	49.45
Refunds	3.00
Tax	47
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	\$513.71

Balance in hand 895.71

\* Includes 17/1983 and 1/1984 subscriptions.

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We are still in a sound financial position as the above figures indicate, however, with the proposed alteration to the financial year from 1st January/31st December to 1st March/28th February (refer Editorial) the balance in hand will have to cover the cost of two Bulletins.

Membership based on subscriptions (not numbers of persons) stands at 172 of which 32 are new (1983) members.

Distribution is as follows:-

South Australia	16 (20)	Tasmania	10 -
Northern Territory	1 (2)	Western Aust.	7 -
Victoria	80 (97)	A.C.T.	2 (3)
N.S.W.	21 (23)	N.Z.	2
Queensland	21 (27)	Overseas	12

Note: Figures in brackets represent number of persons registered.

## QUESTION TIME

Angela Chappell, one of our members from Bendigo, Victoria requested information on the fossilised cocoons found on the coastal dunes of Eyre Peninsula, South Australia (Bulletin No.10, Page 9.).

The following contents of a letter from Hans Mincham, The South Australian Museum 1973, has been received from Eric Nowak of Lakemba, N.S.W. :-

These objects are the fossilised cocoons of a giant weevil, or snout beetle, (Leptopius duponti).

This beetle feeds on the leaves of wattles (acacia), and its stout legless larvae live in the soil beneath these trees. When about to pupate the grubs make an earthen cell, which initially is not a very strong cocoon. It consists of a rather thin covering of soil, the particles of which the grub cements together with a secretion apparently produced by the mouth.

In lime-rich soil, where most of these cocoons occur, there is a seasonal re-inforcement of the cocoon with lime. This produces a massive stony object. Most have a hole near one end, where the mature insect emerged.

These cocoons are not geologically ancient but could be many centuries or thousands of years old.

## PALAEONTOLOGICAL MEETING, DECEMBER 1983

The Association of Australasian Palaeontologists, a specialist group of the Geological Society of Australia Inc., is holding an Australian Palaeontological Meeting at the Museum of Victoria, Melbourne, on 5th and 6th December, 1983.

F.C.A.A., Members who wish to attend the meeting, at which some 17 papers will be presented, should write to :-

Dr. P.A. Jell,  
Museum of Victoria,  
Division of Natural History &  
Anthropology,  
285-321, Russell Street,  
Melbourne, Victoria, 3000.

enclosing a cheque/money order for \$10.00, the fee for the two day meeting.

## CATALOGUE YOUR FOSSILS BY CARD INDEX

At the Broken Hill Gemboree it was agreed by members that we investigate the cost of printing index cards which, when filled in, would provide an ideal system of cataloguing your fossil collection.

The use of index cards will make it much easier to retrieve information about a particular specimen in your collection and have the added advantage of being able to pass on such information with the fossil should you ever decide to dispose of it.

The cards would be 125 mm x 75 mm (5" x 3"), printed as shown on the adjacent page. The cost will be between \$4.00 and \$4.50 per 100 including postage, the final figure depending on the interest shown by members.

If you are interested in purchasing cards please let the Secretary know the number you want. Do not send any money until invoiced, in case the response doesn't warrant the high initial outlay of Association funds.

Write to : The Secretary F.C.A.A., 15 Kenbry Road,  
Heathmont, Victoria, 3135.

Front

FOSSIL COLLECTORS ASSOCIATION OF AUSTRALASIA

Phylum/Division ..... Sp'n No. ....

C'mon name/Description .....

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Genus .....

Species .....

Formation .....

Period & Age .....

Locality .....

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Map ref. ....

Collected ..... Date .....

Back

Bibliography .....

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Notes .....

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Associated fossils .....

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## BOOK REVIEWS

### WHAT FOSSIL PLANT IS THAT? by Dr. J.G. Douglas

We have been advised by the Field Naturalists Club of Victoria, that due to unforeseen circumstances this book is not expected to be available until at least late November.

Members who have ordered copies by mail will receive them as soon as they become available.

Full details about the publication and cost were published in Bulletin No.10.

### ANCIENT AUSTRALIA by Charles Laseron

The third edition of this book has, at last been published by Angus & Robertson and will be available in the bookshops at the end of October. Recommended retail price is \$19.95.

We hope to publish a review of the latest edition in our next Bulletin.

### "THE MOSASAUR" A NEW AMERICAN PALAEOLOGICAL JOURNAL

The Delaware Valley Palaeontological Society, an association of amateur and professional palaeontologists, published the first issue of The Mosasaur, a new palaeontological journal, in January, 1983.

The Mosasaur will have a unique niche among palaeontological journals with the types of articles that it will publish and the audience to which it will be directed. An editorial policy for the journal has been designed to bridge the gap between the amateur and professional communities, publishing articles of interest to all.

Since most of the palaeontological journals being published are specialized and quite narrow in scope, there are certain types of information that have no easy outlet for publication. These include palaeobiogeographic data, locality descriptions, collection and preparation techniques, and the history of palaeontology, to name a few. The Mosasaur will publish articles on these subjects, written by both amateurs and professionals. All articles selected by the editors will be refereed.

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The journal will be published on an occasional basis in a 216 mm x 280 mm (8½" x 11") format. The first issue is approximately 120 pages in length. Further information is available from:-

William B. Gallagher,  
Dept., of Geology D - 4,  
University of Pennsylvania,  
240, South 33rd Street,  
PHILADELPHIA, PA 19104, U.S.A.

NOTE:The Mid-America Palaeontology Society Digest (Summer 1983) gives the price at \$6.00 for individuals and \$12.00 for institutions. Cheques/bank drafts/international money orders to be in U.S. dollars.

PREHISTORIC ANIMALS OF AUSTRALIA, edited by  
Susan Quirk and Michael Archer.  
Published by the Australian Museum, Sydney 1983.  
Recommended Retail Price: \$9.95 (paperback).

This is probably the first authoritative book of prehistoric Australian vertebrate animals that will be equally of value to the complete newcomer and the serious student. While aimed at the layman, thanks to the professional palaeontologists who are responsible for the descriptions of some thirty species of extinct vertebrates, the text has not been allowed to gravitate to the vague generalities which have marred previous "commercial" books on this subject.

The book leads the reader effortlessly through the fossil record from Devonian placoderms, acanthodians and the early reptiles to the better known giant Pleistocene marsupials such as Procoptodon pusio, Diprotodon optatum and Phascolonus gigas. Also among the species illustrated in the book are Zaglossus spp, the giant echidnas and an ancient Australian bat belonging to the family Megadermatidae, both of which are mentioned in articles in this Bulletin.

One of the rarest fossils included is the Pleistocene fossil snake Wonambi naracoortensis Smith 1976, which it is estimated grew to about 5 metres long, was relatively thick bodied and probably part aquatic. Nearly all of the remains of this species have been found in the Victoria Cave at Naracoorte.

Each of the thirty species described is beautifully illustrated by artist Peter Schouten.

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## PREHISTORIC ANIMALS OF AUSTRALIA (Cont'd)

The only real criticism that can be made, relates to the lack of any illustrations of skeletal material to supplement Schouten's reconstructions of the complete animals in their palaeoenvironment. This would have just added that extra dimension to what is already a very worthwhile production.

At \$9.95 the book is very reasonably priced and will I'm sure find a home on most members bookshelves.

Review by Frank Holmes.

## "GEOLOGICAL IMPLICATIONS OF IMPACTS OF LARGE ASTEROIDS AND COMETS ON THE EARTH"

Anyone who has been following the continuing controversy about past extinctions being caused by the impact of large asteroids and comets will be interested in the publication by the Geological Society of America, Boulder, Colorado, of Special Paper 190, "Geological Implications of Impacts of Large Asteroids and Comets on the Earth". This book, edited by L.T. Silver and P.H. Schultz consists of a series of papers presented by geologists, geochemists, geophysicists, palaeontologists, chemists and physicists at a symposium in Snowbird, Utah, in October, 1981. Cost US\$40.00.

## OVERSEAS COLLECTORS WISHING TO EXCHANGE

### Members

- Mick Cuddeford, 9 Western Road, Maidstone, Kent, ENGLAND, writes to say that he will be pleased to hear from serious collectors interested in trading. Mick's particular interest is in Mesozoic ammonites of Great Britain.
- Dr. Massimo Tosini, Cultore di Paleontologia, Via Don Minzoni 18, Parma, Italy, is interested in swapping all kinds of fossils such as crustacea, trilobites, fish, echinoderms, ferns etc., provided they are scientifically interesting. Currently he is collecting Neogene fossil molluscs and can offer for exchange similar material from Italy (Pliocene) and Europe as well as sea-urchins and very rare brittle-stars. In addition he can obtain material from such famous localities as Bundeibach (Devonian, Germany), Solnhofen (Jurassic, Germany) and Lyme Regis (Jurassic, England).

Dr. Tosini is happy to supply members with all the information they need about fossils and the activity of amateurs in Italy and Europe.

## Non members

- John Hearty of 27 Branchalfield Drive, Wishaw, Lanarkshire, ML28QB, Scotland, is an amateur member of the Glasgow Geological Society and the Palaeontological Association of Great Britain. Although interested in all good fossil specimens he is particularly interested in vertebrates from Ordovician fish to Pleistocene mammals. He can offer trilobites, ammonites, graptolites and many other invertebrate specimens in exchange for top quality Australian material. He looks forward to hearing from members interested in swapping.
- Gotz Brauning, D-6078 Neu-Isenburg, Alicestrasse 76, West Germany, was among the overseas collectors who visited the Broken Hill Gemboree in April. Unfortunately he was on a very tight itinerary and did not have time to meet many members attending the Gemboree.

He writes from Germany to say he is very interested in swapping good specimens and exchanging information on preparation methods. He is particularly interested in the Permian fish from Blackwater. He has an excellent range of top quality material to offer including Devonian starfish, crinoids and trilobites from Bundenbach, Permian fish from Odernheim and Richelsdorf, Solnhofen fish, crabs and dragonflies (Jurassic) and a range of Tertiary material.

- Gary Eichon, 525 McLeod Avenue, Missoula, Montana, 59801, U.S.A., is seeking fossil cones (pine, spruce, fir etc.) for his plant collection. Has fossil plants and invertebrates for trade.
- Carlos Bazan, 310 Tamworth, San Antonio, Texas, 78213, U.S.A., wishes to obtain some Australian fossils particularly echinoderms and graptolites. Has specimens from most animal phyla for exchange including vertebrates, arthropods, molluscs, echinoderms etc. Is also keen to contact anyone who has Permian echinoderms from the Island of Timor.

Editor's Note: The Editor, on behalf of the Association accepts no responsibility for the standard or authenticity of any material exchanged between members. It is suggested that members write and make contact before sending material.

While agreeing to publish details of overseas collectors wishing to exchange fossil specimens with members of our Association you are reminded of the Customs (Prohibited Exports) Regulation details of which were published in Bulletin No.4 Page 24.

## THE GIANT ECHIDNA - ZAGLOSSUS by D.J. Barrie

Prior to Christmas 1982, a team from Flinders University, under the guidance of Dr. Rod.Wells, invited us to visit a dig at the Victorian Fossil Cave, Naracoorte, South Australia. On examining the excavations we found it re-assuring to see the difficulty even these workers have in extracting such delicate vertebrate material.

Later on we decided to carry out an independent dig at another site in the vicinity that had previously produced worthwhile material. Specimens found at this site were shown to Dr.Wells, among them half a femur of the giant echidna Zaglossus. As this particular specimen was considered to be "study material" we naturally donated it to Dr. Wells and made arrangements for him to view other specimens we had previously collected and sorted. Before heading home we returned to our dig to complete mapping the locality.

On the way back to Adelaide from Naracoorte, Dr. Wells called in to view our collection of vertebrate fossils, the Zaglossus material proving to be the high-lite. On leaving he asked what we intended to do with the specimens, making it quite clear they must be scientifically written up. He also asked if we would be interested in doing this and after some thought we agreed to take on the project under his guidance.

Zaglossus is a large form of Echidna, a monotreme which is distinguished by having a reptilian reproductive system, persistent caracoid, diffuse mammary glands, incomplete temperature regulation and an absence of the corpus collosum.

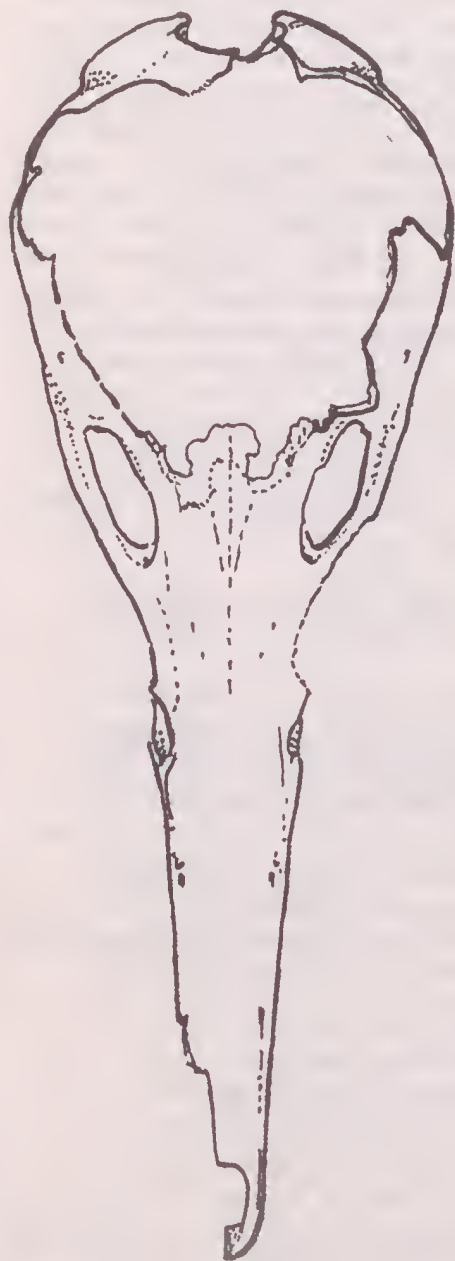
The bone structure of monotremes, animals that may prove to be an intermediate link between reptiles and mammals, is very distinctive and even bone fragments can be readily recognised as belonging to the family.

Apart from the fossil record it is represented by a remnant population in the highlands of New Guinea where it feeds on worms.

According to Murray (1978) the extinction of the genus Zaglossus in Australia probably occurred during the late Pleistocene, possibly long before New Guinea was isolated from the Australian mainland by the Torres Strait. In a technical sense therefore, Zaglossus did not become extinct on the continent until well into the Holocene. However, the species Zaglossus bruijni appears to have remained confined to the

Cont'd. Page 14.





Above:

*Tachyglossus aculeatus*, drawing of skull of extant short nosed spiny anteater, xl.

Left:

*Zaglossus* sp., drawing of skull of extinct giant echidna, xl.

Drawings by J. Barrie 1983.

Cont...



## THE GIANT ECHIDA - ZAGLOSSUS (Cont'd)

mountain regions of New Guinea, at least since the end of the Pleistocene. Its habitat includes mountain forest and alpine grasslands at altitudes of between 1,800 and 4,000 metres.

The late Pleistocene Australian Zaglossus habitat appears to have been sparsely forested grassland or mosaic savannah where they lived in association with both browsing (Sthenurus, Palorchestes) and grazing (Macropus, Protemnodon) species of herbivores.

Fossil Zaglossus material has been recorded from cave and swamp deposits in all Australian States. Three species Zaglossus robusta, Z. ramsayi and Z. hacketti became extinct by the end of the Wisconsin glaciation about 10,000 years ago.

The Naracoorte specimens are found in Pleistocene material deposited in caves formed in the Tertiary limestones of the Naracoorte (Upper) and Mount Gambier (Lower) Formations. No exact age for the fossils can be given, however, they are probably in the vicinity of 30,000 years old.

The illustrations of Zaglossus sp. and Tachyglossus aculeatus (Australian or short nosed spiny anteater) are drawn from specimens collected by the Barries.

## GLOSSARY

- coracoid : A strong curved outgrowth of tissue arising from the upper surface of the neck of the scapula. In the echidna the coracoid process is extended to connect with the sternum.
- corpus collosum : The large elongated commissure joining the cortex of one hemisphere of the brain with that of the other. It is located at the bottom of the fissure between the two hemispheres.

## REFERENCES

- Murray, P.F., 1978. Late Cenozoic monotreme anteaters. In: Augee, M.L. (ed.) Monotreme Biology. Royal Zoo. Soc., N.S.W. Mosman, N.S.W., pp. 29-55.
- Pledge, N.S., 1980. Giant Echidna in South Australia. The South Aust. Naturalist. Vol. 55 No. 2, pp. 27-30.
- Wood Jones, F., 1923. The Mammals of South Australia, Part 1. The Monotremes and the Carnivorous Marsupials, South Australian Government Printer, Adelaide, S.A.

## THE DESCRIPTION OF NEW SPECIES by Neil W. Archbold.

The International Code of Zoological Nomenclature (there is a botanical equivalent), contains in considerable detail the rules that are applicable to the description of a new species, genus or family within the animal kingdom.

These rules, together with the Opinions and Recommendations set down by the International Commission on Zoological Nomenclature should be understood and adhered to by anyone attempting to set up a formal description of a new species.

Attention to the Rules, Opinions and Recommendations will determine whether the proposed name for the new species is "available" and valid. This in turn explains why descriptions of species follow a reasonably set format.

The following modified outline of the author's description of a new species of Permian brachiopod in 1981, is given as an example of the format that is generally followed in a modern species description.

Phylum	BRACHIOPODA	Dumeril 1806
Class	ARTICULATA	Huxley 1869
Order	PRODUCTIDA	Sarycheva et Sokolskaya 1959
Suborder	CHONETIDINA	Muir-Wood 1955
Superfamily	CHONETACEA	Bronn 1862
Family	RUGOSOCHONETIDAE	Muir-Wood 1962
Genus	<u>SVALBARDIA</u>	Barkhatova 1970

Generic Diagnosis or Description : Often given by the author, if change or modification to the understanding of the genus is required.

Generic Discussion : May be two-fold. (1) reasons for change of understanding of genus. (2) Comparison with closely related genera and a discussion of which species the author considers should be included within the genus.

Svalbardia narelliensis sp. nov.

Plate 2, Fig. A-Y. (ref. to plate of photographs  
or drawings)

Synonymy : Any previous references or reports of the  
species under different names.

Cont...

## DESCRIPTION OF A NEW SPECIES (Cont'd)

- Holotype : Designation of the type specimen, usually with a cross-reference to the illustration of the specimen.
- Etymology : The origin or source of the new species name; in this case after Narelli Rockhole, Canning Basin, Western Australia.
- Location and Occurrence : The geographical locality and the geological position of all the specimens studied. Includes the holotype and its type locality.
- Measurements : Usually given as tables of dimensions. The measurements may be treated statistically.
- Diagnosis : Not necessarily included. Usually a brief statement of a few lines giving the most diagnostic features of the species.
- Description : Full description of the morphology of the species.
- Discussion : A comparison of the species with others of the same genus; may include a discussion of affinities of the species.
- Remarks : Not necessarily included. May contain comments on synonymy, previous identifications, relative abundance etc.
- Geological Age and Range : Brief statement of age and stratigraphic range of the species.
- References : A complete list of scientific papers and literature used as references during the preparation of the new species description.

The illustrations of the new species will be accompanied by a brief summary, usually covering the following : Plate number, figure number, name of genus and species, statement of new species, kind of type, repository of figured specimens, catalogue number, age, geological formation, view (e.g., ventral or dorsal), magnification and at times a reference to the page in the text giving the full description (especially if the plate comes at the end of the article).

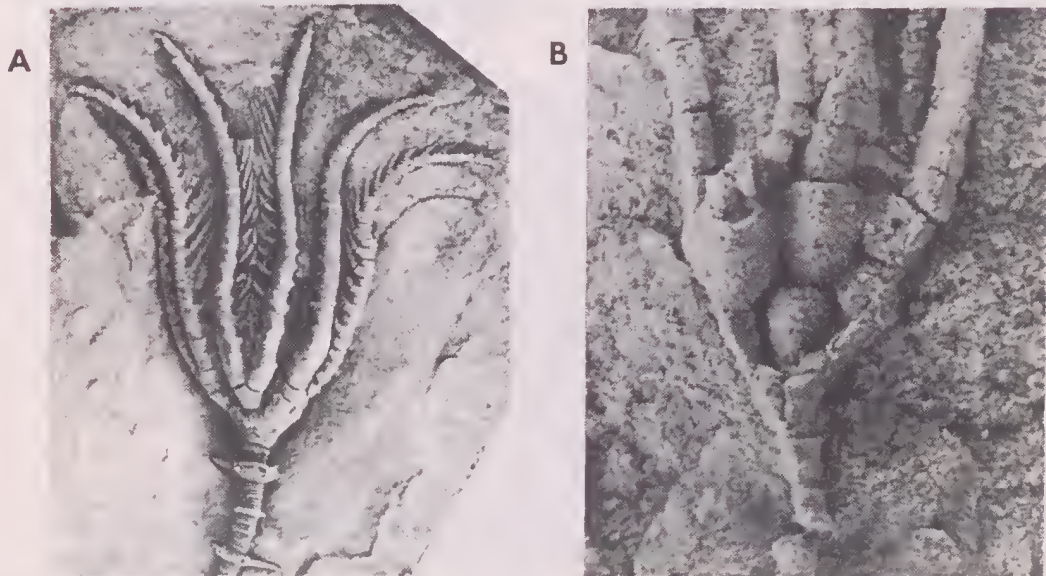
## NEW FOSSIL SPECIES FROM THE WINNEKE RESERVOIR SITE, VICTORIA

During construction of the Winneke (Sugarloaf) Reservoir, a number of Late Silurian or Early Devonian fossils were discovered in the Dargile-Humevale Formation transition beds.

Considerable earthworks including quarrying for rock fill during construction of the Reservoir, situated 33 km. northeast of Melbourne, Victoria, afforded excellent exposures of fresh rock. Although fossils proved to be relatively rare, those found are nevertheless in many respects quite significant, most being first records for Australia.

One site yielded considerable numbers of the large dalmanitid trilobite Odontochile formosa but only five specimens of Reedops, one of the carpoïd Rutroclypeus junori and one of a new ophiuroid (brittle star) Mausoleaster sugarloafensis. Illustrations of these fossils, except for Rutroclypeus junori are shown on Page 11 of Bulletin No.8 September, 1982.

In addition to the above, this site, a low cutting for an access track on the right bank of a stream gully, also produced a questionable record of the trilobite family Tropicocoryphinae,



A. Dimerocrinitidae gen. et sp. nov., upper stem and crown, x3.

B. *Dendrocrinus saundersi* sp. nov., enlargement of theca in left posterior view, x7.

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## NEW FOSSIL SPECIES FROM THE WINNEKE RESERVOIR SITE, VICTORIA (Cont'd)

an indeterminate straight nautiloid, a new species of Scyphomedusoid, Conularia comriei, moulds of a solitary Rugosa, and the brachiopod Notoparmella plentiensis.

A second site in a small cutting for a track which ran up the side of the ridge from the main creek gully, produced large numbers of the brachiopods Notoparmella plentiensis and Notanoplia panifica but only one echinoderm, a new species of crinoid Codiocrinus rarus.

Site geologist Ray Saunders and Wayne Regan made a collection of fossils during the initial excavations for the right abutment of the main dam wall. These consisted of another new species crinoid Dendrocrinus saundersi, another specimen of the new ophiuroid Mausoleaster sugarloafensis and Urosoma glabridiscus, a species of ophiuroid well known from the Heathcote area, having been described by Talent in 1965.

The only other identifiable fossils recorded from the Winneke Reservoir site are on a single slab of siltstone found by Mr. Ron Nutt of Healesville. This slab when split exposed two new crinoids Kooptoonocrinus nutti gen. et sp. nov. and Dimerocrinitidae gen. et sp. nov. The latter, although not assignable to any existing genus, has been left in open nomenclature until details of its posterior interray and a better preserved cup are available. Unfortunately the exact site and horizon from which these specimens originated is uncertain, as they were found at the time material was being dumped, having been quarried elsewhere at the dam site.

The significance of the Winneke Reservoir sites, now submerged below water pumped from the Yarra River, can be seen by the fact that P.A. Jell and D.J. Holloway in their 1983 paper, described one new species of trilobite, one new species of coelenterate, one new genus of ophiuroid and two new species and two new genera of crinoids, thus adding further information on the fossil record of the Melbourne Trough.

### References:

- Jell, P.A. and Holloway, D.J., 1983. Devonian and ? Late Silurian Palaeontology of the Winneke Reservoir Site, Christmas Hills, Victoria. Proc.R. Soc., Vict. Vol. 95, no.1, 1 - 21, March 1983.
- Talent, J.A., 1965. The Silurian and Early Devonian faunas of the Heathcote district, Victoria. Mem. Geol. Surv., Victoria, 26.



C



D



E



C, D, *Kooptoonocrinus nutti* gen. et sp. nov., left lateral view and enlargement of same,  $\times 1.4$  and  $\times 6$  respectively.

E, *Urosoma glabridiscus* Talent, oral view,  $\times 7$ .

## TALBRAGAR FISH BED FLORA

About two years ago, a revision of the Talbragar Fish Bed flora by Mary E. White was published in the Records of the Australian Museum.

The three well known form-species of this flora - Podozamites lanceolatus, Elatocladus planus and Taeniopteris spatulata have been redescribed as Agathis jurassica sp.nov, Rissikia talbragar-ensis sp.nov. and Pentoxylon australica sp.nov., respectively. Other minor components of the assemblage were described and illustrated and in some cases reclassified.

As many Australian collectors will know, the Talbragar Fish Beds are characterised by beautifully preserved Jurassic fish and plant remains which occur in an ochre-coloured ferruginous shale lens. The weathering of the outer layers of the shale blocks has resulted in contrasting bands of iron-rich stain which often frame and enhance the appearance of the specimens.

The fish beds situated on the northern slopes of Farris Hill, North East of Gulgong, New South Wales were discovered by Mr. A. Lowe of Wilbertree in 1889. In the same year Mr. William Anderson, The Geological Surveyor of the N.S.W., Mines Department in describing his visit to the site, remarked on the very large numbers of specimens which were awaiting transportation. These specimens obtained from splitting up oblong and square blocks of shale "which lay scattered over the surface of the hill" form the Cullen Collection, held by the Mining Museum, Sydney. The thousands of specimens of this first collection stored in their original crates had been superficially examined only once since they were packed away in 1890. At the time of crating W.S. Dun and R. Etheridge Junior briefly examined the material and sent a selection of specimens representing all the fish species present to A. Smith Woodward at the British Museum. This resulted in a monograph of the fish (Woodward 1895). A small number of specimens containing all the plant specimens were also selected and a plant list published by Etheridge in 1889. A.B. Walkom's 1921 account of "The Fossil Plants from Cockabutta Mountain and Talbragar" was also based on a study of these specimens.

In 1978 a brief inspection by Alex Ritchie, Ralph Molner and Mary White marked the start of a detailed examination of the 5,000 or so specimens of the Cullen Collection and a count to show the relative proportions of the components of the flora.

The basis on which the count was made was somewhat arbitrary, a twiglet or recognisable fragment of such on which foliage spurs of several leaves occur being recorded as one specimen "Podozamites lanceolatus", compared with single leaves or reasonable sized fragments of leaves for "Taeniopteris spatulata".

In all 1,300 occurrences of "Podozamites" and 1,060 of "Taeniopteris" were recorded.

The relative rarity of "Elatocladus" (75 occurrences) was surprising until it was realised that the collections of the Australian Museum and Mining Museum had been made by selecting specimens to show the different components of the flora from collections other than the Cullen, thus giving the impression that "Elatocladus" was second in dominance to "Podozamites" in the Talbragar bed instead of a relatively rare member of the flora. Pteridosperm leaves of the Pachypteris crassa and "Thinnfeldia pinnata" type together numbered 300 occurrences.

"In all the specimens examined, there was no fragment which could be identified as being of insect origin. The only insect found to date in the Talbragar Fish Beds is "Cicada lowei Etheridge" a specimen of which was found in the Cullen Collection in 1890 (Etheridge and Olliff 1890).

From the analysis of the relative proportions of the species comprising the vegetation at Talbragar in Jurassic times, a picture emerges of a lake containing many fish in an area of "Kauri Pine" forest.

Numerous smaller trees of Pentoxylon grew interspersed in the forest (in much the same way as Banksia trees today form a lower tree zone below eucalypts) with occasional scattered trees of "Elatocladus" and podocarpaceous conifers, and with a heath zone surrounding the lake composed of Pachypteris type Pteridosperms. A few ferns and rare cycads grew in suitable places in the forest and lake surrounds."

## "Podozamites lanceolatus L. & H."

According to Mary White the name "Podozamites lanceolatus" used by Dun and retained by Etheridge in 1889 and Walkom (1921) to describe the dominant plant of the Talbragar flora, was most unfortunate as it was not acceptable. The original specimens of "Podozamites lanceolatus" described and illustrated by Lindley and Hutton (1836) although superficially similar to the Talbragar material are a species of cycad.

Cont...



## TALBRAGAR FISH BED FLORA (Cont'd)

A detailed study of the Talbragar specimens and comparison with living conifers confirm that the plant belongs to a podocarpaceous genera and it is with Agathis that the greatest affinity exists.

"The Talbragar material not only shows a full range of leaf size and form all consistent with Agathis, but the deciduous foliage spurs are also diagnostic of the genus, and the only reproductive structures which can be related to the foliage are young female cones of Araucarian (Agathis is Araucarian) and cone scales undeniably of Agathis"

Podozamites lanceolatus L. & H., has therefore been redescribed as Agathis jurassica sp. nov. It was not possible to call it Agathis lanceolatus as there is a living species with this name.

### "Elatocladus planus (Feist.)"

The discovery of a magnificent cone in a specimen recently bought by the Museum from a private collection has enabled the determination of "Elatocladus planus" as a podocarpaceous conifer. There are foliage leaves attached to the base of the cone, so that the relationship of cone and leaves has been positively identified. The new cone has the same general structure as Rissikia (Townrow 1967b) to which it and the attached leaves have been assigned. No firm conclusions can be reached on whether all the types of the "Elatocladus planus" form-species foliage found in the Talbragar Fish Bed horizon are one species and should be included in total under the new name Rissikia talbragarensis sp. nov.

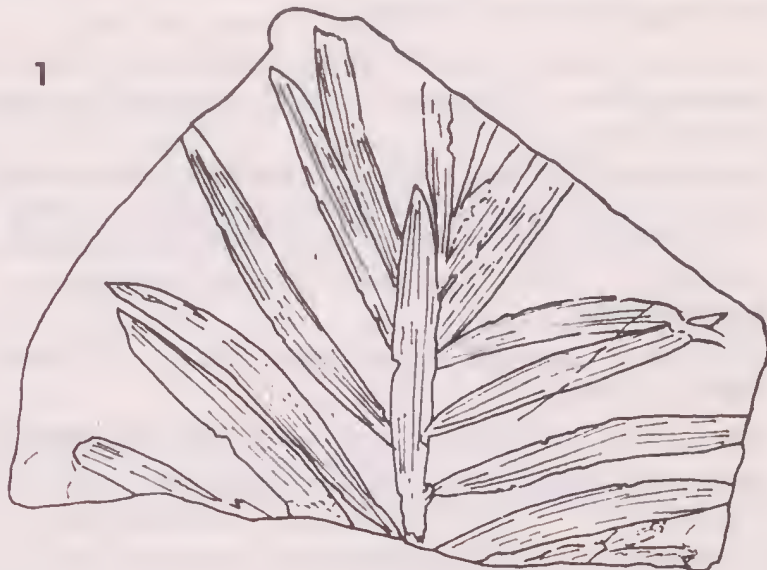
### "Taeniopteris spatulata McClelland"

The second commonest foliage of the fish beds is the long narrow taeniopterid leaves referable to the form species Taeniopteris spatulata. Re-examination of one of the very rare examples of cone-like bodies illustrated by Walkom (1921) which turned out to be a perfect Carnoconites type fructification, and the discovery of two further examples, have enabled the determination of the leaves of Taeniopteris spatulata and the fruit as Pentoxylon, consequently a new species Pentoxylon australica was formed.

Species comprising the flora of the Talbragar Fish Beds as listed by Mary White are :-

1. Agathis jurassica sp. nov. Foliage "Podozamites lanceolatus L. & H." Young female cones, mature cone scales, male pollen cones Araucariaceae.

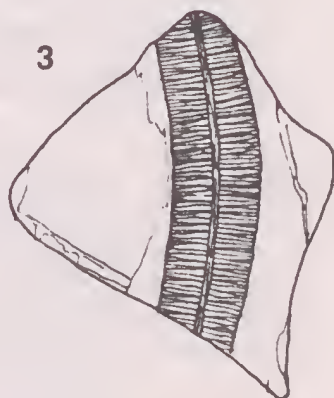
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1. *Agathis jurassica* White, ("*Podozamites lanceolatus*") xl.

2. *Rissikia talbragarensis* White, ("*Elatocladus planus*") xl.

3. *Pentoxylon australica* White, ("*Taeniopteris spatulata*") xl.

Cont...



## TALBRAGAR FISH BED FLORA (Cont'd)

2. *Rissikia talbragarensis* sp.nov. Foliage, female cone. Podocarpaceae. Foliage of "*Elatocladus planus*" form species type.
3. *Pentoxylon australica* sp. nov. Foliage, female fructifications. groups of male microsporangia. Leaves of "*Taeniopteris spatulata*" form species type. Pentoxylaceae.
4. *Allocladus cribbii* Townrow. Foliage and cones. Podocarpaceae.
5. *Allocladus milneanus* (Ten.Woods).Townrow. Foliage. Podocarpaceae.
6. *Elatocladus australis* (Freng.) Foliage. Podocarpaceae.
7. *Nilssonia compta* (Phill.)Harris. Nilssoniaceae. (Cycadales.)
8. *Selaginella* sp. Selaginellaceae (Lycopodiales.)
9. *Onychiopsis* sp. Fern fragment.
10. *Cladophlebis australis* (Morr.) Fern fragments.
11. *Coniopteris hymenophylloides* Bgt. Fern fronds. Dicksoniaceae.
12. *Pachypteris crassa* Townrow. Pteridosperm fronds.
13. "*Thinnfeldia pinnata* Walkom (pars.)" Pteridosperm or fern fronds.

## Fauna of the Talbragar Fish Beds.

Insecta : *Cicada lowei* Etheridge & Olliff 1890.  
Fish : (Sherbon Hills, 1958)

*Coccolepis australis* Smith Woodward  
*Uarbyichthys latus* Wade  
*Aetheolepis mirabilis* Smith Woodward.  
*Aphnelepis australis* Smith Woodward.  
*Archaeomene tenuis* Smith Woodward  
*Madariscus robustus* Smith Woodward  
*Leptolepis talbragarensis* Smith Woodward

## References

The above article is based on the following paper :-

White, M.E. 1981. Revision of the Talbragar Fish Bed Flora

Cont...

(Jurassic) of New South Wales. Records of the Australian Museum 1981, Vol. 33 No.15, 695-721, Figures 1-53.

Other references which will be of interest to members are :-

Rozefelds, A.C. Pentoxylon: An unusual Fossil Tree, Australian Gem & Treasure Hunter, August 1982, No.71, 10 & 11.

Walkom, A.B. 1921. Mesozoic floras of New South Wales, Pt.1. Fossil Plants of Cockabutta Mt., and Talbragar. Mem. Geol.Surv., N.S.W. Pal.12.

Woodward, A.Smith, 1895. The fossil fishes of the Talbragar Beds. Mem. Geol.Surv., N.S.W. Pal.9.

## POSSUMS, BANDICOOTS AND BATS

The following article is based on a talk by Dr. Michael Archer on the A.B.C., "Science Show", July 23rd 1983.

Revisiting a site in North-western Queensland, Dr. Michael Archer and a team from the University of New South Wales have recently stumbled across a rich fossil vertebrate bed, possibly one of the most important bone deposits ever found in Australia.

Walking across what was thought to be Cambrian limestone i.e., about 500 million years old, the team were naturally not expecting to find vertebrate remains, however, the Geological mapping of the area, based on aerial photography was "luckily" inaccurate and what in fact they were traversing were the remnants of Miocene cave deposits about 15 million years old.

Dr. Archer, who had paused to allow one of the team to catch up, suddenly realised he was standing on a rock bristling with bones. Subsequent investigation revealed the bones were from strange little extinct ringtails, bandicoots, bats and two or three animals that have no counter parts living today. The most exciting aspect of the find is the fantastic state of preservation of the specimens, not the usual fragments of bone, but whole bones, jaws and, in one case, a complete skull.

One rock which was broken open revealed a bandicoot skull with the contours of the brain, including detail of the blood vessels and nerves, preserved in the very fine sediment that had infilled the skull.

It is believed that the exquisite preservation resulted from the animal being trapped in mud surrounding a lime saturated pool.

Cont...

## POSSUMS, BANDICOOTS AND BATS (Cont'd)

When the animal settled into the ooze there would have been little to disturb its skeleton and as the organic tissues slowly decomposed they were replaced with limy sediment almost molecule by molecule. When the mud filling the skull hardened and began to calcify it preserved in perfect detail every aspect of the soft anatomy, so that when 15 million years later the rock was broken, it snapped off the top of the skull to reveal a perfect cast of the brain.

Prior to the Riversleigh discovery it had been necessary to rely almost entirely on living species to provide information about the relationships between Australia's mammals. The knowledge gained from this new site may well change some of the previously held beliefs. By looking at the changes in the shape of teeth and skulls, the area in the region of the ear and the way bones reticulate in the feet, we can learn a lot about the lineages which produce our modern animals.

Today we merely see a cross section of the branches that represent Australian animal radiation. With this new material we now have another section through the evolutionary tree, 15 million years back in time, which will enable us to link up the branches that we only see tips of today and better understand how these animals relate one to another.

Most people have probably heard of the musky rat kangaroo, (Hypsiprymnodon moschatus) a little animal that scampers throughout the rain forest of northern Queensland. It has long been known to be the most primitive kangaroo living today, however, its particular relationship to any other kangaroo is very obscure.

A specimen found in the Riversleigh deposit appears to be of a creature half way between one of these animals and another group of kangaroo that otherwise hasn't been tied into any modern group.

While the deposit is a significant step forward in understanding some of the ancestry of Australia's unique marsupials, it is still far too young to give any clues to their origin. For this



it would be necessary to go back about 100 million years, not a mere 15 million.

Probably the most important find and the one which has made it possible to give a relative age to the deposit, was the discovery of a number of fossil jaws belonging to a particular species of bat. Fossil bats are rare in Australia, in fact prior to this discovery there have been only two other discoveries of any significant age.

Study of the specimens showed that they did not belong to any species of bat found in Australia today.

Researching literature from other continents led to contact with a Frenchman who has made his major life's work, the study of the evolution of bats. Some of the jaws were sent to him as they appeared to be similar to the French material he was working on. It was with much excitement that Dr. Archer and his colleagues learnt that the Riversleigh specimens were of the same genus and sub genus as the fossil bats being studied in France, the jaws being so distinctive that the identification could not be doubted. To date, these particular bats have not been discovered anywhere else in the world, although it is probably only a matter of time before other deposits with similar fauna turn up in South East Asia. Until they do we can only speculate how two localities so far apart contain an identical genus of bats. The relationship with the well dated French deposit has helped confirm the Riversleigh limestone as being of Miocene age.

Editor's Note: The following extract from "The Fossil Vertebrate Record of Australia" edited by P.V.Rich and E.M. Thompson may be of interest to readers as it gives more detailed information on the Miocene fossil bats found in Australia.

"The earliest known bat is Icaronycteris from the medial Eocene Green River Formation of Wyoming, U.S.A.

Bats were the first terrestrial placental mammals to reach Australia, the oldest record on this continent being a single tooth tentatively assigned to the rhinolophids (Archer, 1978c). This specimen comes from the medial Miocene Ngapakaldi Fauna of South Australia.

As there is only a very scanty pre-medial Miocene record of non-marine mammals in Australia, it is uncertain how much earlier bats may have entered the continent and what overseas routes were utilised to do so.

Cont...



## POSSUMS, BANDICOOTS AND BATS (Cont'd)

Two specimens of a megadermatid and literally hundreds of another microchiropteran similar to species of the Hipposideridae have been found in the medial Miocene Riversleigh local fauna of northwest Queensland (Archer, 1982a).

The hipposiderid is similar at the generic level to an Oligocene form known from the Phosphorites du Quercy in France (Archer, pers. comm.) This reflects the generally slow rate of chiropteran evolution during the Tertiary. Apparently bats, unlike most other mammalian groups, reached an adaptive plateau early in their history and have evolved only slowly since then."

## A SIGN OF THE TIMES?

One fifth of the French Department Alpes de Haute Provence was proclaimed a Geological Reserve in 1982.

Within the boundaries of the reserve it is only possible to collect specimens with your bare hands. The use of hammers or other tools is prohibited.

According to a Belgium Palaeontology Magazine, the authorities hope to prosecute collectors breaking the law and are encouraging people living in the district to inform the police when they see infringements of the regulations!

Roadsigns have been erected to mark the locality. They depict two black crossed hammers on a red circle with a diagonal white stripe across the middle.

The magazine suggests that their members do not buy anything in the tourist resorts in the area concerned.

It is also reported that the Government of East Germany has forbidden the collecting of fossils, minerals and rocks in the Sachsische Schwabiz (Elbe Valley, South of Dresden) without a licence; apparently to prevent West German collectors plundering this part of the Country. The report adds that there are enough police to efficiently patrol the countryside.

Information supplied by Bep.Schekkerman.



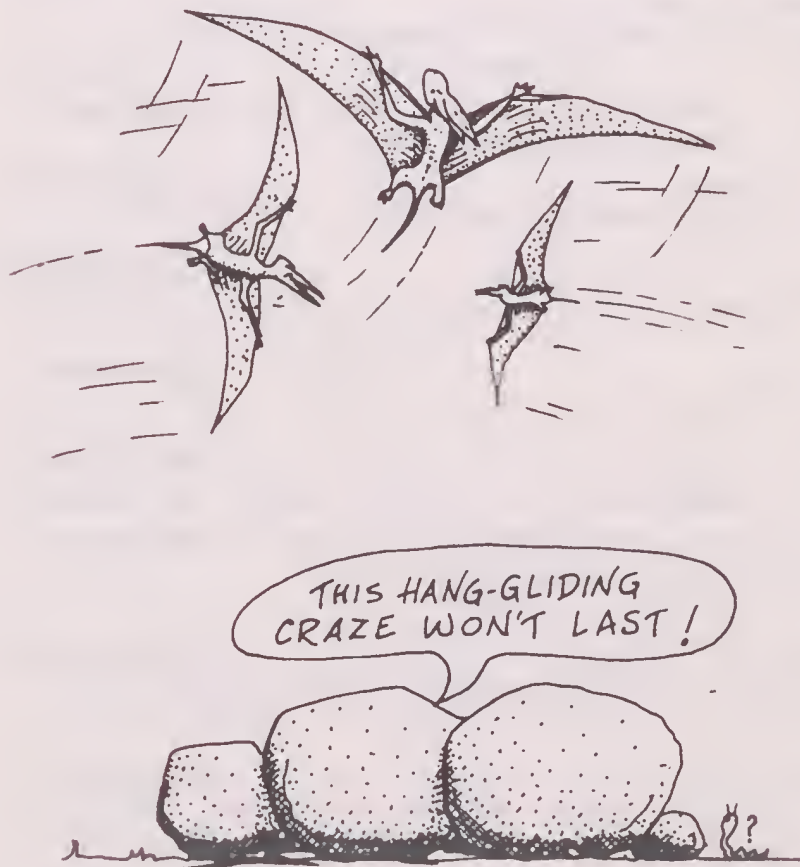
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